



INVESTOR IN PEOPLE

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South Wales
NP10 8QQ



the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1985 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name under which it is so re-registered.

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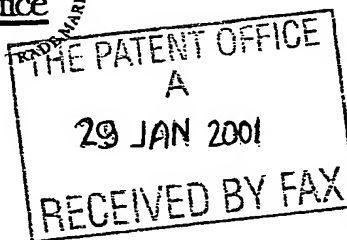
**CERTIFIED COPY OF
PRIORITY DOCUMENT**

Signed

Stephen Horvath

Dated 30 January 2002

Patents Form 1/77

Patents Act 1977
(Rule 16)

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
Newport
South Wales
NP10 8QQ

1. Your reference **RFS | VOICEWEB-2**

29JAN01 E601611-1 D01463
P01/7700 0.00 0102231.8

2. Patent application number
(The Patent Office will fill in this part)**0102231.8****29 JAN 2001**

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Hewlett-Packard Company
3000 Hanover Street
Palo Alto
CA 94304, USA

Patents ADP number (if you know it)

Delaware, USA

If the applicant is a corporate body, give the country/state of its incorporation

4965880014. Title of the invention **Sound related systems and methods**

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom
to which all correspondence should be sent
(including the postcode)

Robert F Squibbs
Hewlett-Packard Ltd, IP Section
Filton Road
Stoke Gifford
Bristol BS34 8QZ

Patents ADP number (if you know it)

7928187001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

Yes

- a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.

See note (d))

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9. Enter the number of sheets for any of the following items you are filing with this form.
Do not count copies of the same document

Continuation sheets of this form

Description

Claim(s)

Abstract

Drawing(s)

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10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents
(please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature

Robert Francis Squibbs

Date

29 January 2001

12. Name and daytime telephone number of person to contact in the United Kingdom

K Nommoots-Nomm

Tel: 0117-312-9947

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

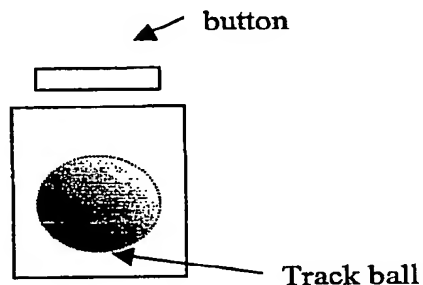
- If you need help to fill in this form or you have any questions, please contact the Patent Office on 08459 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- Once you have filled in the form you must remember to sign and date it.
- For details of the fee and ways to pay please contact the Patent Office.

Patents Form 1/77

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Audio service access device and method

The note describes some methods and devices used to explore and select services represented in a 3D audio environment.

5 We choose for 3D audio environment a virtual audio sphere centred on the user. Services appear in the audio environment as short audio clips (also called audio icons or earcons). These earcons are not located inside the sphere but **at its surface**. The user can only interact with services that are virtually in front of him in the audio sphere. The device we propose to explore the set of services is made of a ball that can turn at 360 degrees and a button (the device is very similar to a track ball). By turning the ball, the user can make the virtual audio sphere –and therefore the services audio representations- turn around his head. The user can select the service in front of him by clicking on the button.



25 Variant 1:

3D audio positioning might not be good enough to place accurately sounds on the audio sphere surface. The surface can be divided into sections where sounds can be positioned. For instance, the sphere can be divided into quadrants, or some finer grain division. The physical movement of the real ball could be restricted as well. The ball can revolve but its rotation is blocked every quadrant.

Variant 2:

We propose to replace the track ball by to wheels: one horizontal and one vertical to reproduce the movement of the audio sphere.

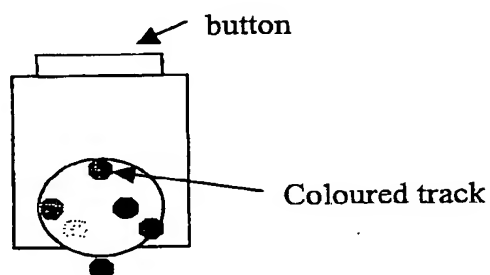
5 Variant 3:

This is a variant of 1. Services appearing in the audio environment are located in a particular portion of the sphere. Each portion of the audio sphere could be given a particular colour. A new service announces itself with a description and a colour associated. For instance, "HP Invent in blue", "Microsoft in red".

10 The physical ball itself is divided into coloured portions. The user can select then select a service by moving the trackball to the portion of the right colour, or by saying the colour he is interested in. The colour information provides the user with some hint that complements his guess of where in the audio space the service is located. It is
15 also a good mnemonic clue.

NB: the feeling might be a bit weird, because the user sees the ball from the outside, whereas he is virtually inside.

20 Other idea: Drag and drop of services. You can drag a service from a particular coloured section to another section, by keeping the button pressed and moving the trackball to the new position (colour) of your choice.



30 Variant 4:

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This is a variant of 3. There is no simple order relation between colours. For instance, where is blue compare to red? If the user is interacting with a service located in a blue portion and want to access a service located in a red portion, how does it get there? The user would have to memorize the respective position of all the colours on the ball.

- 5 We propose to use a model inspired from a world globe. Instead of being positioned at a specific coloured portion of the sphere, a service can be given a location corresponding to a city name. For instance "HP service in SF" or "IBM in New York", "Vodafone in London". The physical ball itself is covered with a painting of a world globe. The globe indicates countries as well as major cities names (which are
- 10 locations in the sphere where services can appear).

It is easy for the user to remember the service location, because it is a common name. It is also easy to go from a service to another one, because one knows the relative position of 2 cities. Example, NY and SF.

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The nature of a service could be linked to its location. For instance, a pizzeria could be located somewhere in Italy. A Chinese take away could be located somewhere in China. A fish an chips in London....etc...

20 Variant 5:

- This is a variant of 3. It is quite painful to have to listen to services announcing themselves all the time until the user starts interacting with them. The physical ball should represent the state of the audio sphere. We propose to add l.e.d.s inside the
- 25 ball, so that a particular portion of the sphere is lightened when there is a service available at this location.

Problem: how to switch on and off l.e.d.s inside the ball?

30 Variant 6 (of 5)

We can replace the L.E.D.s by adding a display coupled with the trackball. The display shows a 3d view from the inside of the sphere. The user can see what services

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are available. He can select a service by putting it in from of him and clicking on the button.

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